DOCUMENT RESUME

ED 451 555 CS 510 520

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TITLE Classroom Communication Apprehension and Distance Education.
PUB DATE 2001-04-00
NOTE 28p.; Paper presented at the Annual Meeting of the Southern States Communication Association (71st, Lexington, KY, April 4-8, 2001).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150) -- Tests/Questionnaires (160)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Classroom Communication; *Communication Apprehension; *Communication Problems; Communication Research; *Communication Skills; *Distance Education; Higher Education; Speech Communication
IDENTIFIERS *Communication Behavior; *Communication Strategies

ABSTRACT

The rise of distance education classrooms in colleges and universities call for attention to the difference in communicative strategies need from a regular classroom. This study examined the concept of classroom communication apprehension (CCA) and the distance classroom. Ninety-two students from three different classes participated in this study. The results indicated that as the fear of technology confronted in the distance class rose, so did the apprehension to communicate in the class. But as the student experienced a positive feeling with the technology, his/her apprehension to speak in class was less. Suggestions are presented along with limitations. Finally, a plea was made to encourage the research in this new area--the distance classroom. Contains 34 references. Appendixes contain data and the survey instrument. (Author/RS)

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ED 451 555

Graduate Student Paper

Running head: CCA & DISTANCE EDUCATION

Classroom Communication Apprehension and Distance Education

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Paper submitted to the 2001 meeting of the Southern States Communication Association, Instructional Development Division, Lexington, KY.

CS 510 520

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Abstract

The rise of distance education classrooms in colleges and universities call for attention to the difference in communicative strategies need from a regular classroom. This study examined the concept of classroom communication apprehension (CCA) and the distance classroom. Ninety-two students from three different distance classes participated in this study. The results indicated that as the fear of technology confronted in the distance class rose, so did the apprehension to communicate in the class. But as the student experienced a positive feeling with the technology, his/her apprehension to speak in class was less. Suggestions from this study were suggested along with limitations. Finally, a plea was made to encourage the research in this new area - the distance classroom.

Classroom Communication Apprehension and Distance Education

Distance education is offering both opportunities and concerns across the United States. Cotton (1995) reports that "30 percent of higher education institutions are currently engaged in some form of distance learning; 38 percent are planning for it during 1994 and 1995." (p. 37). As time goes forth in this new venture in education, the question still rises: What will become of the classroom interaction? Will it be the same? Or will it be influenced in some manner by the use of technology?

Communication apprehension (CA) has been present in the literature for a number of years (see McCroskey, 1977). A definition of communication apprehension is given by McCroskey (1977, p. 78) as "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons." But most individuals that attend university classes do not need to consult literature to know something about the concept called "classroom communication apprehension" (CCA). The experience is typified by this example:

> You're attending a class here at the university. It is a class in which students sometimes make comments or ask questions, and you consider yourself prepared for the class. During the class, a question or comment occurs to you, and you think that your question or comment would be useful to you and useful to the class generally. Yet, because of some kind of inhibition or apprehension, you do not make the comment or ask the question.
>
> This situation is not new. It occurs in every classroom.

This study will consider the distance education class and the effects of CCA. First, a review of literature will be given concerning CCA and distance education.

Following the literature review, the methodology used will be explained. The results of the study will then be given followed by a discussion of the findings.

Literature Review

Classroom Communication Apprehension (CCA)

Anxiety is "pain or uneasiness of mind respecting some event" (Grolier Webster International Dictionary, 1975). For instance, CA is conceptualized as the anxiety experienced in a particular situation at a particular time and may be regarded as an actual reaction to a stimulus (Beatty, 1988). Daly and Friedrich (1981) look at the development of CA by studying the areas of reinforcement, skill acquisition, modeling, and parental and school environments. CA may be considered a subconstruct of reticence and unwillingness to communicate, but differs from these two constructs in that it specifies only anxiety and/or fear as the causal agent (Watson & Dodd, 1984). CCA is, basically, the fear or anxiety of participating in class discussion and/or question asking activities (Neer, 1987; Neer & Kircher, 1989; Aitken & Neer, 1992; Aitken & Neer, 1993).

A growing body of literature also exists about classroom apprehension, the fear of communicating in class discussion and question-answer participation. Much attention has been given to behaviors of these apprehensives. Included in this research are preferred seating locations of apprehensive students during discussion (McCroskey & Sheahan, 1976; McCroskey & McVetta, 1978; Neer, 1987). Research has also considered that reticents and apprehensives are often inhibited, reserved, and are

generally more tense during discussion (Burgoon & Hale, 1982; Burgoon & Koper, 1984; Burgoon, Pfau, Birk, & Manusov, 1987).

A study by Chan and McCroskey (1987) using the Willingness to Communicate (WTC) scale observed that high WTC-classified students were two to four times more likely to take part in class discussion than low WTC-classified students. The WTC was developed to measure a trait-like personality predisposition and thus doesn't not specifically assess apprehension associated with willingness to communicate (Neer & Kircher, 1989). Nevertheless, the WTC correlates with the PRCA-24 where McCroskey & McCroskey (1986a & 1986b) demonstrate behaviorally the impact of apprehension-related willingness to communicate on class interaction.

Identifying apprehension often appears to be even more difficult than developing effective treatment for apprehension (Neer, 1987). Kelly (1982) suggests in a study of shyness, unwillingness to communicate, reticence and apprehension that an analysis of these constructs show many similarities. But the imprecise nature by which we measure apprehension may lead to the assumption that our measures cannot label one form of apprehension to the exclusion of another (Neer, 1987). So it would not be surprising that one might be tempted to trust their own judgement, especially those that specialize in treatment, rather than relying upon diagnostic measures to guide them in identifying apprehension and determining its treatment.

Apprehension about class participation is evident to classroom instructors but has received limited research attention. The PRCA as been the primary instrument used to measure classroom apprehension. But this instrument is primarily targeted

toward identifying level of nervousness and perceived anxiety rather than locating communication behaviors that are characteristic of apprehensive communicators (Neer, 1987). For this reason, Neer established the Class Apprehension about Participation Scale (CAPS). Examination of CCA with the CAPS suggests that select interventions may hold the potential to reduce situational anxiety (Neer, 1990a). Classroom apprehension was therefore operationalized as avoidance of participation prompted by evaluation apprehension or expectation of negative outcomes associated with participation. (For more information on the CAPS see the methods section in this paper.)

Communication in the Distance Education Classroom

The literature reveals that creating intentional interaction will be essential to student learning. Studies of traditional classrooms have shown a connection between classroom interaction and student learning and attitude. Bloom (1981) has concluded that it was evident that "interaction between teachers and students in the classroom was the major factor in accounting for the cognitive learning of the students, their interest in the school subjects and school learning, and their confidence in their own learning capabilities" (p. vi).

Daly, Friedrich, and Vangelisti state that "interactive teaching is a powerful instructional strategy" when used appropriately and can lead to "positive instructional outcomes" (p. 314). Weimer (1993) contends that "when students are learning actively, they learn more, retain it longer, can apply it better and continue learning" (p. 49).

The distance education classroom tries to immulate the regular classroom as much as possible, particularly in the interaction activity. Barker, Frisbie, and Patrick (1989) address the interaction of the telecommunications setting saying, "Much like a traditional classroom setting, students can seek on-the-spot clarification from the teacher. Opportunities for teacher/student interaction also promote greater spontaneity for all participants in the teaching/learning process" (p. 23). "Quality distant education is dependent upon the interaction and participation of the learners, similarly as in traditional face-to-face instruction" (Kruh & Murphy, 1990). Kruh and Murphy continue to emphasize that distant educators purposefully design the interaction ingredient into the instructional program. Two-way communication is very important to both the traditional and distance classroom. Accessing information is not sufficient. This information must be shared, critically analyzed, and applied in order to become knowledge." (Garrison, 1990).

Threlkeld, Behm and Shiflett (1990) argue, "As live interactive video instruction grows throughout the country there is increasing interest in the value and necessity for instruction-student interaction" (p. 80). They studied whether the level of student interaction was related to student course outcomes or attitudes. It was found that students who described themselves as more interactive during the live televised classes were students who tended to perform better in the class, like the course more, and feel more a part of the class than do low inter-actors (Threlkeld, Behm, & Sheflett, 1990). While this does not suggest causation, they do suggest interaction is highly related to those positive performance and attitudes.

Although this study considers the instructor/student interaction, it looks primarily at those students that have a difficult time in communicating in a class situation. As to this point, no one has investigated CCA and the distance education classroom. Realizing that every student comes into the classroom with a certain amount of apprehension, does that apprehension increase with the introduction of technology? Does CCA have any correlation with the fear of this technology? With these questions in mind the following hypothesis was examined:

H1: The classroom apprehension that an individual exhibits will not be affected by his/her feelings of technology.

The following research questions will be examined:

RQ1: Is there a correlation between the student's view of technology in the classroom and his/her classroom apprehension?

RQ2: Are there other variables that can play a part in this phenomena of classroom apprehension and distance education?

The method of answering these questions will be examined in the following section.

Method

Participants

Three distance education classes at a major southeastern university were used for this study. Two of the classes consisted of three (3) sites, one on the university campus and two distance sites. One of the classes consisted of nine (9) sites, one on the university campus and eight distance sites. Surveys were distributed to all the classes

the first week of April, 1988. Ninety-two surveys were returned. Of the respondents, 70 were females. The ages differed from 20 to over 41 years of age.

Instruments

Data were collected with the use of a self-report questionnaire. The questionnaire consisted of two surveys and some demographic questions. One of the surveys used measured the amount of apprehension in the classroom. The survey that measured this variable was the Class Apprehension Participation Scale (CAPS) developed by Neer (1987). The CAPS was designed to measure classroom apprehension along four dimensions: communication avoidance (e.g., "I always avoid speaking in class discussion if possible"), evaluation apprehension (e.g., "I am often afraid I will say something that is wrong during a discussion"), communication competence (e.g., "I have difficulty organizing my thoughts when I want to say something in class"), and communication confidence (e.g., "I like speaking during class discussion because most students listen to what I say" (Neer & Kircher, 1989). The CAPS is a 20-item questionnaire using five-point Likert-type response scales (strongly agree to strongly disagree). The reliability of the CAPS has consistently ranged from .92 to .94 in published reports (Neer, 1987; Neer, 1990; Aitken & Neer, 1993). The *Alpha* reliability for the CAPS in this study was .81.

The second questionnaire was designed to measure the degree of apprehension experienced in the distance classroom with the added technology confronted. The distance classes are taught via two-way interactive television using compressed bandwidth transmitted through either a virtual T1 network (in Tennessee, called

"EdNet") or through individual ISDN connections from each of the four remote Virginia sites. The transmission ends are 386Kbs/second producing a significant compression of real video/audio. Thus at times, the picture on the monitor will be "jerky" and a time lag may be produced in both audio and video transmissions.

In the distance classroom students experience television monitors set up in front and behind the class. These monitors display the instructor, when speaking, and different sites. To participate in a discussion, a student must first turn on his/her microphone. This is accomplished by pressing a button. When the "red light" is on, the student can then speak and be heard over the system (through the speakers in the television monitors. When this occurs, the camera in the classroom focuses on the student and displays his/her face on the monitors in the classrooms. This way everyone can see who is talking.

The survey, the Classroom Apprehension and Distance Education (CADE), measured the degree of comfort an individual experiences in dealing with the microphone, camera, and monitor in the classroom. The survey consisted of 12 statements. One statement, #10, was thrown out realizing it was repeated earlier in the survey. After conducting a factor analysis of the CADE (see appendix A), it was then broken into two factors. The factors were described as positive feelings (e.g., "I am calm and relaxed when seeing myself on the monitor asking or answering a question in class.") and negative feelings (e.g., "The microphone is a hindrance to me participating in class discussion or asking a question.") of technology. The weakness of question 11 caused the rejection of it. Question 12, although strong in a 3rd factor, did not relate

strongly to the positive or negative aspects of the survey so it was not used. This left five items for the negative feelings and four items with the positive aspects of the CADE. The *Cronbach Alpha* for the negative CADE (five items) was .86, while the *Alpha* for the positive CADE (four items) was .85. The overall *Alpha* was .90.

Insert Appendix A about here

The other items in the survey consisted of demographic questions of age, sex, number of sites in that particular class and the total number of distance education classes that the individual has taken. All of the participants were Master's level students. The next area of discussion will look at the results of the surveys.

Results

The two surveys, CAPS and CADE, were totaled and averaged so that a t-test could be performed on the averages of the individual scores. The null hypothesis for this study was that the means of the two surveys would be equal. A t-test conducted of the CAPS average and the Positive CADE statements showed a significant difference in the two (d.f. = 91, $\underline{t}$ = -9.64, $\underline{p} < .0001$) (see Appendix B). Also, a t-test was applied to the Negative CADE statement and the CAPS showing a significant difference in the means of the two (d.f. = 91, t = 6.09, $p < .0001$) (see Appendix B). Therefore, the hypothesis is rejected.

Insert Appendix B about here

In response to the first research question, a correlation was found between the positive and negative feelings of technology in the classroom and the CAPS. A very strong correlation was discovered with the negative (fear) of technology and classroom apprehension (r = .906) (see Appendix B and C) indicating that as the fear of technology increases in an individual, so does the amount of apprehension the student experiences in the distance classroom. At the same time, a strong negative correlation was discovered when comparing the positive feelings toward technology and the CAPS (r = -.607) (see Appendix B) designating that as a student feels more comfortable with the technology in the classroom his/her fear of speaking in the distance classroom goes down.

Insert Appendix C about here

It was thought that the age, grade level, number of distance class taken, and number of sites in a particular class might have some bearing on the classroom apprehension. A stepwise regression was run with the CAPS as the dependent variable while the two factors of CADE, age, sites (number of sites of the different classes), and number of distance classes taken (detaken) as the independent variables. Only the fear

aspects of technology (R^2 = .82) [df (1, 90), t = 20.340, p < .0001] and the number of sites in a particular class (R^2 = .83) [df (2,89), t = -2.441, p < .01] were statistically significant.

Next, we will look at what this means in light of the research already established.

Discussion

This section will discuss the findings in relation to answering questions that come from them. Also, it will consider the limitations of this project and suggestions for further research in this area.

Discussion

This research was to see if the concept of CCA would be effected by the technology in the distance classroom. Although this study did not look at specific problems or solutions, some can be assumed with the results. First, it seems that those who fear or have a problem with the technology are the ones that have a problem with speaking up in class. The findings that as the student fears or has a problem with the technology the fear or anxiety in participating in class rises is supported by past research. McHenry and Bozik (1995) concluded that technology in the classroom affects students' perception of the class and the communication in it. Bruce and Shade (1995) suggest that if the student and instructor are both uncomfortable with the technology, the technology becomes a barrier to learning. Repman and Logan (1996) suggest that a mismatch between technology and instruction and the unnecessary emphasis placed on the technology by the instructor could also be a barrier.

There seems to be a need to instruct students on how to use the technology in front of them. Discomfort and technology are apparent in many forms. Many

instructors unfamiliar with the technology place an over-emphasis on the technology and all of its "bells and whistles." The use of unfamiliar technical terms may also cause discomfort for students and instructors. Training and experience are fundamental solutions to this technophobia and discomfort. Both students and instructors must be given as many opportunities as they feel they need to move beyond discomfort (Repman & Logan, 1996). This may require on-site support, on-line consultations, and/or written or video support materials. The time and expense involved in creating these materials is justified in the learner-centered classroom, where learning cannot occur if the technology is hampering participation in the course.

The encouraging thing about this problem is that students seem to adapt fairly well to technological change. In fact, according to McHenry and Bozik (1995) most students view the technology change positively. It remains to be seen if this technology change has any effect on the high CCA. It seems that no matter the medium of communication, the high CCA will still be apprehensive in participating in discussions or asking questions in class.

Limitations and Future Research

There were limitations to this study. The first I would like to mention is that all of the participants in this study were graduate students. There were no undergraduate students to compare with. It would be interesting to see if there was a difference in how the technology is viewed from younger students. What about the maturity level? It seems logical that a graduate student would be more mature than an undergraduate. Would that make a difference in the results?

The number of classes and the number of different sites with each class were a problem in this study. There were only two different variables in this study. Two of the classes had three sites while the third class had nine sites. Is there an "optimum" number for how many sites would be best for a distance class?

It would be better to have more participants. Numbers always seem to help in a study of this caliber.

And finally, how is the best method of instructing students in how to use the technology in the distance classroom? As this study and other studies suggest, training is an important aspect in regards to the expectations for communicative participation.

Conclusion

The distance classroom is very rich with possibilities for communication research. This paper examined the concept of CCA, how it affects the regular classroom, and seeing how it affected the distance classroom. It was discovered that those students that fear or are apprehensive about using the technology in the classroom are also very anxious in communicating in the class. Vise versa, if the student has positive feelings about the technology in the classroom, he/she is also less apprehensive in participating in class discussions or asking questions in class. A discussion of these findings, the relevant literature, and suggestions were also given.

As communication scholars interested in communicative aspects in the classroom environment, the distance class offers more challenges. I encourage others to investigate this avenue as it will be affecting more and more instructors and students in

the coming years. May we always strive to make the classroom a more comfortable place for students and instructors to talk and engage in effective learning strategies.

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Appendix A
Factor Analysis of CADE (Classroom Apprehension and Distance Education)

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3
CADE1	-.17923	.86744	.12636
CADE11	-.67107	.43584	.21989
CADE12	-.00239	-.01716	.95688
CADE2	-.28905	.78812	-.07244
CADE3	-.34506	.81497	-.10205
CADE4	-.49006	.56102	.04392
CADE5	.50244	-.52767	.07625
CADE6	.78397	-.22373	.02079
CADE7	.66074	-.39160	.19254
CADE8	.84140	-.24205	-.19406
CADE9	.82334	-.24950	.13314

Appendix B
T-test of the Positive and Negative CADE and CAPS

Technology Fear by CAPS

Variable	Number of pairs	Corr	2-tail Sig	Mean	SD	SE of Mean
CAPSAVE				3.5321	.503	.052
	92	.906	.000			
FEARAVE				3.8898	.742	.077

Paired Differences			t-value	df	2-tail Sig
Mean	SD	SE of Mean			
-.3577	.356	.037	-9.64	91	.000
95% CI (-.431, -.284)					

Technology Positive by CAPS

Variable	Number of pairs	Corr	2-tail Sig	Mean	SD	SE of Mean
CAPSAVE				3.5321	.503	.052
	92	-.607	.000			
POSAVE				2.6984	.946	.099

Paired Differences			t-value	df	2-tail Sig
Mean	SD	SE of Mean			
.8337	1.314	.137	6.09	91	.000
95% CI (.562, 1.106)					

Appendix C
Regression on CAPS and Fear of Technology

Variable(s) Entered on Step Number
1.. FEARAVE

Multiple R	.90627
R Square	.82133
Adjusted R Square	.81934
Standard Error	.21393

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	18.93404	18.93404
Residual	90	4.11887	.04577

F = 413.72148 Signif F = .0000

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
FEARAVE	.615094	.030240	.555016	.675171	.906272
(Constant)	1.139504	.119723	.901653	1.377355	

---------- in ----------

Variable	T	Sig T
FEARAVE	20.340	.0000
(Constant)	9.518	.0000

Appendix D
Regression of CAPS and Sites in a Particular Class

Equation Number 1 Dependent Variable.. CAPSAVE

Variable(s) Entered on Step Number
2.. SITES SITES

Multiple R	.91244
R Square	.83254
Adjusted R Square	.82878
Standard Error	.20827

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	19.19245	9.59623
Residual	89	3.86045	.04338

F = 221.23411 Signif F = .0000

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
FEARAVE	.607730	.029595	.548927	.666534	.895424
SITES	-.017181	.007039	-.031168	-.003195	-.106429
(Constant)	1.261520	.126824	1.009523	1.513517	

---------- in ----------

Variable	T	Sig T
FEARAVE	20.535	.0000
SITES	-2.441	.0166
(Constant)	9.947	.0000

Appendix E
Survey Instrument

Survey Instrument for CCA & Distance Education

Basic Information Please.....

Please mark (x or 3) the best answer that describes you or your situation to each statement. (Mark only one per area please.)

Age in years on last birthday:
___ (16-19) ___ (20-21) ___ (22-23) ___ (24-26) ___ (27-29) ___ (30-34)
___ (35-40) ___ (41 & above).

Sex: ____ Female ____ Male.

Current Status in School: ____ Freshman ____ Sophomore ____ Junior
____ Senior ____ Master's program ____ Ph. D. program

How many distance education classes have you taken (including the one you are presently in)?
___ (1) ___ (2) ___ (3) ___ (4) ___ (5) ___ (6) ___ (7) ___ (8)

How many sites (classrooms) are included in your present distance education class? (your class included)
___ (2) ___ (3) ___ (4) ___ (5) ___ (6) ___ (7) ___ (8) ___ (9) ___ (10)

Class Apprehension about Participation Scale (CAPS)

DIRECTIONS: This instrument is composed of twenty statements concerning feelings about communicating in the classroom. Please indicate on the line by the statement the degree to which each statement applies to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree. Please just record your first impression.

_____ 1. I worry that the instructor will call on me during class.

_____ 2. If I have a question I want answered, I usually wait for someone else to ask it in class.

_____ 3. I don't like speaking in class because I feel that I do not have as much to say as most other students.

_____ 4. I usually do not speak in class unless called on by the instructor.

_____ 5. I have difficulty organizing my thoughts when I want to say something in class.

_____ 6. Class discussion generally makes me feel anxious.

_____ 7. I often hesitate to speak during class discussions because many other students know how to talk better than me.

_____ 8. I don't like speaking in class even when I think I know an answer to a question asked by the instructor.

_____ 9. I like participating in class discussion because I feel I can convince others about what I am saying.

_____ 10. I always avoid speaking in class discussion if possible.

_____ 11. If the instructor called on me during discussion I would feel at a loss for words or wouldn't know what to say.

_____ 12. I enjoy expressing my thoughts during class discussion.

_____ 13. I am often afraid that the instructor or the class may not understand what I am trying to say during discussion.

_____ 14. I would rather listen than participate in a class discussion.

_____ 15. I like speaking during class discussion because most students listen to what I say.

_____ 16. I am hesitant about speaking in class unless the instructor specifically asks for questions from the class.

_____ 17. I am often reluctant to participate in class discussion because I am uncertain how others will react to what I say.

_____ 18. I would speak during a class discussion even if I was not required to do so for part of my grade in the course.

_____ 19. I usually feel too tense or nervous to participate in class.

_____ 20. I get anxious if I think the instructor is going to call on me during class discussion.

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Classroom Apprehension and Distance Education (CADE)

DIRECTIONS: This instrument is composed of 12 statements concerning feelings about communicating with other individuals in a distance education classroom environment. Please indicate the degree to which each statement applies to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree. Please record your first reaction to the statement.

_____ 1. I am calm and relaxed when seeing myself on the monitor asking or answering a question in class.

_____ 2. I am not hesitant to push the button on the microphone in order to ask a question or participate in a discussion in class.

_____ 3. I am not nervous at all when asking a question or making a comment in a distance education class.

_____ 4. I really don't mind the monitors in the class.

_____ 5. I am nervous in pushing a button just to ask or answer a question in class.

_____ 6. All these buttons, microphones, cameras, etc. used in the class discourage me from asking a question.

_____ 7. I am intimidated by the television monitors in the classroom.

_____ 8. The microphone is a hindrance to me participating in class discussions or asking a question.

_____ 9. I concentrate so much on pushing the button or on seeing myself in the monitor that I sometimes forget what I wanted to say.

_____ 10. I really don't mind the monitors in the class.

_____ 11. I don't think using the microphone in class is a problem at all.

_____ 12. I get excited about talking about something in class when I think of all the microphones, monitors, and cameras in the classroom.

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